IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application:

Applicant:	Frederick J. LANDRAM et al.	:	Art Unit:	2141
Serial No.:	10/688,316	:	Examiner:	Djenane M. Bayard
Filed:	October 17, 2003	:		

Title: SELF CONFIGURING MOBILE DEVICE AND SYSTEM

DECLARATION UNDER 37 C.F.R. §1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

We, Frederick J. Landram and Vincent P. Luciano, declare and say as follows:

(1)   We are the inventors of the claimed invention of the above-identified patent application. This Declaration is submitted to establish conception of the invention described and claimed in the above-identified application in the United States at a date prior to June 18, 2003, which is the filing date of U.S. Patent Application No. 10/464,087, published as Publication No. US 2004/0259533 A1, and diligence, from a time prior to June 18, 2003 until the filing date of the above-identified application, at which time our invention was constructively reduced to practice.

(2)   To establish completion of the invention claimed in the above-identified application prior to June 18, 2003, a copy of a Symbol Marketing Requirements Document, which describes conception of the invention in this country, is enclosed with this Declaration as Exhibit A, entitled "Out of Box Magic Program, Marketing Requirements Document".

(3)   Symbol Technologies, Inc. is the assignee of the above-identified patent application. The invention described in Exhibit A was conceived prior to June 18, 2003. (The actual dates contained on the documents, which predate June 18, 2003, have been removed from the copies submitted herewith).

(4)   Exhibit A includes the following statements of the invention:

> Out of Box Magic (OBM) is the process and tools that allow even non-technical personnel to successfully power-up and use Symbol's advanced mobility solutions (pg. 4, first paragraph).

> The OBM solution can be completely "hands-free" in open network environments, and provides secure solution with minimal operator interaction, where security is a concern. This flexibility is provided the intelligent OBM architecture that can either self-discover its environment and configuration, or have initial configuration settings entered using manual input or via a bar code scanner (pg. 4, fifth paragraph).

> The Out of Box Magic program utilizes proven internet standards to enable discovery and provisioning of mobile devices from Symbol's network server or from a customer enterprise server (pg. 10, first paragraph).

> Device identification and profile information, device software and configuration, is stored on these Internet accessible servers (pg. 10, second paragraph).

> The Symbol Corporate Device/Profile server maintains a database of deployed devices by their MAC addresses. These unique identifiers are used to enable a device or customer specific profile to be assigned to a device (pg. 10, third paragraph).

> The OBM solution consists of several key components, which tightly integrated for effective and ease of use management... The main components are the Out of Box Magic Client and the Out of Box Magic Management Server (pg. 12, fifth paragraph).

> The OBM Client or Engine is a device resident software module that interacts with a server component to manage and monitor the update and operation of applications on the device. The client also collects device performance data to manage the health of the mobile device (pg. 13, first paragraph).

> The OBM Management server is the control, data collection and distribution point for managing mobile computing devices (pg. 13, third paragraph).

The OBM Management server provides the services required to gather and store accurate and abundant data through automated data collection performed by the OBM client (pg. 13, fourth paragraph).

See Figure on pgs. 10 and 12 of Exhibit A.

(6)   In view of Exhibit A, it can be seen that the invention claimed in the above-identified application was conceived in this country prior to June 18, 2003.

(7)   From a time prior to June 18, 2003, which is the filing date of U.S. Patent Application Publication No. US 2004/0259533 A1, our attorney, the assignee Symbol Technologies, Inc., and we were diligent in constructively reducing the above-identified invention to practice by filing the above-identified application as a regular application on October 17, 2003. The four-month time period between just prior to June 18, 2003 and October 17, 2003 included communications between our attorney and ourselves, drafting of the application, revisions of the application, and filing of the application.

(8)   On information and belief, at least as early as the date of Exhibit A, which is prior to the date of June 18, 2003, our attorney was actively working on preparation of the above-identified application. To the best of our knowledge and belief there was no inactivity with respect to the above-identified application during the period from just prior to the filing date of U.S. Patent Application Publication No. US 2004/0259533 A1, June 18, 2003, until the effective filing date of the above-identified application, October 17, 2003.

We, the inventors, hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued therefrom.

Respectfully submitted,

_____   _5 - 7- 2007_____
Frederick J. Landrani   Date

_____   _____
Vincent P. Luciano   Date

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See Figure on pgs. 10 and 12 of Exhibit A.

(6)   In view of Exhibit A, it can be seen that the invention claimed in the above-identified application was conceived in this country prior to June 18, 2003.

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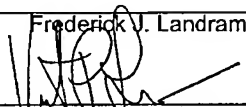
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We, the inventors, hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued therefrom.

Respectfully submitted,

_____   _____
Frederick J. Landram   Date

_____   _____
Vincent P. Luciano   5/18/07   Date

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CERTIFICATION OF MAILING/FACSIMILE TRANSMITTAL/ELECTRONIC FILING

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REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
1	Initial Draft	.	FJL
2	Incorporation of Engineering & Marketing	!	FJL

symbol®

Out of Box Magic Program
Marketing Requirements Document

Author: Fredrick J. Landram
Title: Out of Box Magic Program MRD
Type: Symbol Internal Document PRP
Document Number: XX-XXXXX-XXX
Date:

SYMBOL TECHNOLOGIES INC.

PROPRIETARY & CONFIDENTIAL

<u>Signature Approval of Document</u>

Author:
Fredrick J. Landram

Date: _____

<u>Required Approvals</u>

Product Manager:
<Typed Name>

Date: _____

VP Product Marketing:
Vincent Luciano

Date: _____

<u>Optional/Additional Approvals</u>

Program Manager:
<Typed Name>

Date: _____

Engineering Manager:
David J. Willow

Date: _____

The above list of approvers shall sign the document denoting their review and approval per the requirements of the PRP process. The document owner is responsible to specify all required and optional approvals and may elect to accept alternate approvers only if authorized by the required approver. The final responsibility for document approvals remains with the document owner and the Program Manager.

The electronic master copy of this document is maintained in the Document Management System. The preferred method of approval of this document shall be via electronic acceptance of either a Group Wise task email or an Agile password protected approval of the associated Project Document Change Package. Electronic approvals shall be denoted by an "/e/" on the signature line. (i.e., /e/ John Smith) In the event that electronic signatures were **not** obtained, the master copy of this document shall contain a scanned file of the actual signatures obtained during the approval process.

Marketing Requirements Document (MRD)

1. Overview

Out of Box Magic (OBM) is the process and tools that allow even non-technical personnel to successfully power-up and use Symbol's advanced mobility solutions. The "magic" is making complex and sophisticated mobility solutions as easy to deploy as a typical consumer electronic product. Devices will "automagically" come alive and be ready for use.

Gaining and maintaining customer confidence and loyalty is a primary goal of the Symbol product life cycle management program. All phases of the product life cycle are interdependent and leverage capabilities defined and delivered in the various steps. Product life cycle management encompasses more than the physical device, device software and peripherals, it also takes into account the required systems, infrastructure, solutions and personnel that accompany the product from creation through end-of-life. The first step in the customer experience with a Symbol product starts when the product package arrives and is opened. This first 5-minute experience is when Out of Box Magic begins. This document describes the marketing requirements for this initial phase in the product management life cycle.

1.1 Program Description

Out of Box Magic (OBM) is a working term that will be used to describe a series of product features that relate to the total Symbol Customer experience. OBM will deliver products to customers that are so cleverly packaged, so easy to set up, configure, load applications and troubleshoot, that a non-technical user could deploy a fleet of wireless mobile terminals and scanners without the intervention of an IT professional.

The Out of Box Magic Program primarily affects the deployment and redeployment of mobility solutions within the product life cycle experience. OBM automates mobile solution deployment to ease complex processes, including:

- Device Diagnostics & Troubleshooting
- Network Connectivity
- Security – Device & User Authentication
- Environment Discovery – Location and Peripheral Devices
- Provisioning & Configuration
- Software Distribution & Install

The Out of Box Magic solution enables quick and accurate device deployment through the use of innovative technology that balances ease of network access and setup, with security concerns. The OBM solution can be completely "hands-free" in open network environments, and provides secure solution with minimal operator interaction, where security is a concern. This flexibility is provided by the intelligent OBM architecture that can either self-discover its environment and configuration, or have initial configuration settings entered using manual input or via a bar code scanner. Rapid deployment is just one of the capabilities that the OBM program provides that will dramatically influence the Symbol customer experience.

The OBM Program impacts many areas within both Symbol and the customer environments and requires core system components and infrastructure to enable this program.

- Manufacturing, Staging, Depot Service, Helpdesk Support
- Devices – automated provisioning and integrated diagnostics
- Support Infrastructure – Internet accessible software upgrades, QuickStart Guides and on-line support
- Enables future device management capabilities: Asset/Inventory Management, Physical Security/Maintenance Solution, Remote Support (Diagnostics/Control), License Management and Usage/Performance Analysis.

Marketing Requirements for Out of Box Magic Program

1.1.1 Problem Summary

Current practices in the deployment of mobile solutions involve physically touching each device to enable connection to the site network, configuration and update of device software, and setup of device peripherals. This activity can occur on-site or during a staging operation and is labor intensive and time consuming.

- Manual configuration of devices and peripherals
- Out-of-date and/or incomplete System and Application Software
- Unavailable Devices - Out of Service due security, configuration or versioning issues.
- Additional Training of IT and Operation Staff to support new devices
- "Dead On Arrival" (DOA) Devices
- Serviced devices returned with "No-Fault Found"

2. Business Justification

Properly positioned and marketed, the OBM program and associated follow-on solutions can strongly position Symbol Technologies as the dominant player in mobility solutions. Once clearly defined and implemented Symbol can influence other mobility device vendors, particularly Printer vendors to adapt the OBM technologies. If protected by intellectual property, this can lead to license agreements with these vendors and potential competitors in our vertical market space.

The current mobile solution market is being entered by players in the PC market space, both hardware and software. One goal of the independent software vendors (ISV) is to commoditize all hardware platforms, so that their software functions identically across all vendors products. These ISVs would include Operating systems, Development and Management tools and application providers.

The Out of Box Magic program is one area that Symbol can lead in the mobility solution market that will provide product differentiation to the Symbol solution set. The OBM program provides the ability to support Symbol mobile solutions across WLAN and WWAN environment, independent of the wireless infrastructure vendor.

Once a leadership role is established with OBM, this mobility solution driver will become a <u>necessary</u> "plug-in" for all solutions that want to enter the mobile solution market, particularly in our strong vertical market areas. The Out of Box Magic program is targeted to all of Symbol's current markets and will be a key component of the next-generation of Symbol mobile computing products.

2.1.1 Program Advantages

There are many advantages that can be realized with the Out of Box Magic Program. Both Symbol and our customers will recognize these advantages:

- Reduce the total cost of device ownership
- Reduce deployment costs through "seamless" integration into new and existing environments
- Eliminate manual update processes
- Eliminate re-deployment costs (Service or other sites)
- Up-to-date application, system software, and configuration
- Improve Security & Authentication
- Reduce troubleshooting and support costs
  - o Reduces support and service calls
  - o Eliminates or reduces on-site service
- Improve Utilization and Up-time
- Increases Productivity - Keeps resources focused on business activities, Symbol and Customer
- Increased Customer Satisfaction
- Positions Symbol with "Trusted Advisor" status

2.1.2 Value to Symbol

Symbol can already differentiate itself relative to its competitors by offering end-to-end solutions that no competitor can equal. From rugged mobile computing and scanning platforms to wireless LAN infrastructure,

Marketing Requirements for Out of Box Magic Program

to top notch Professional Services and a worldwide service and support organization, the message of a "total solutions provider" is a powerful one for our customers. Add to that an extensive network of business partners that provide industry expertise and application development services and customers get the peace of mind of a single source and point of contact for their mission-critical data collection and wireless networking needs. Out of Box Magic takes this already powerful message to another level.

OBM will effectively change the way Symbol does business. The effects will be seen in all areas from manufacturing and operations, to staging and deployment, to services. The company stands to benefit substantially from a standpoint of product and company differentiation. If properly communicated and implemented, this alone will add to the Company bottom line through increased sales and market share. A major goal of the OBM effort will be the attainment of the highest level of customer satisfaction in the industry.

The tangible gains and bottom line effects go far beyond new customers. Significant savings will be realized by Symbol in many areas:

- Labor savings recognized by reducing Manual configuration of devices and peripherals by operations, field, service and staging personnel.
- Reduces or Eliminates on-site service support and service calls, particularly during warranty period.
- Reduction in helpdesk troubleshooting calls
- Increased Systems Robustness of Symbol solutions.
- Reduction of "Dead On Arrival" (DOA) Devices
- Reduction of Serviced devices returned with "No-Fault Found"
- Possible elimination of specialized staging centers
- Savings recognized by automating operating system, firmware and application software updates during manufacturing and at service depots.
- Increases Productivity - Keeps resources focused on business activities, Symbol operation and field personnel.
- Increased Customer Satisfaction
- Positions Symbol with "Trusted Advisor" status

2.1.3 Value to End User

Technologies produced from the OBM program will change the way mobile computing solutions are deployed across the industry. Symbol will lead the way to enable more efficient and innovate solutions built on OBM components that will be shared and licensed to industry partners. The ease of deployment will enable end user customers to see higher returns on investment in a short period of time.

The total cost of ownership associated with deploying mobile solutions will be dramatically reduced with OBM and other complementary Symbol offerings that manage the entire mobile product life cycle.

- Reduce the total cost of device ownership
- Reduce deployment costs
- Eliminate manual update processes with Hands-free Deployment and Updates
- Up-to-date application, system software, and configuration
- Reduced complexity, by automated device and environment discovery
- Increases Productivity - Keeps resources focused on business activities
- Reduces on-site service support and service calls
- Reduces helpdesk troubleshooting calls
- Increase Device Uptime and availability
- Increased Customer Satisfaction
- Positions Symbol as "Trusted Advisor"

Marketing Requirements for Out of Box Magic Program

2.1.4 Advantage over Competition

The competition currently relies on their professional services or partners to provide these deployment services for their customers. This is both expensive and time consuming. They also partner with a variety of device management vendors that supply software and asset management capabilities, none of which meet the level of sophistication and functionality as described for the OBM program.

This program will give Symbol a clear competitive edge over our current and future competitors in the mobile computing marketplace.

2.2 Markets and Applications

The OBM offering will be a component in all Symbol mobile computing solutions for our traditional markets, including retail, warehousing, manufacturing, transportation and logistics, healthcare and government. OBM is part of the horizontal life cycle management solution set that delivers Symbol platform independent solutions that better manage the entire product experience, including:

- Deployment
- Provisioning & Configuration } **Out of Box Magic**
- Software Distribution & Install
- Policy Management & Enforcement
- Tracking & Security Control
- Inventory & Asset Management
- Usage and Performance analysis
- Pro-active service and maintenance
- Remote Control & Troubleshooting

All applications within these markets will benefit from the adoption of Out of Box Magic (OBM). It will help make the next generation of mobility solutions easier to deploy and manage.

A secondary market for OBM is its incorporation into existing device & network management platforms. This innovative solution set will be highly desirable for ISVs seeking to move from traditional desktop PC management into the mobile computing device marketplace. Integration and certification of these offerings with the Symbol OBM program will provide significant market advantage for Symbol by making this capability a "must have" for customers.

2.3 Marketing Issues

Beyond the technical challenges of the Out of Box Magic Program, a well planned and executed go-to market strategy needs to be created to make a dramatic impact in the mobile computing marketplace.

2.3.1 Communication

A tightly packaged advertising and marketing campaign must be developed to deliver the message to end-users in a way that educates and excites people about the value and benefits of the OBM user experience. Venues such as the Sales and Partner Kickoff, trade shows and the trade press will be critical forums in which to affect these changes and educate those that interface with end-users.

Equally critical will be a drastic change in the way Symbol communicates with its customers. Email notification and web-based portals will be utilized to enhance the customer's OBM experience. A key feature of OBM is the automatic, on-demand update of Symbol software revisions, updates and patches on driver, firmware and operating system levels. Hence, a means of proactively notifying customers of these changes and delivering them "hassle free" to customers is an absolute requirement of OBM.

Communication to new and existing suppliers to the mobile solutions marketplace will always be vital to the continued penetration of all of Symbol's vertical markets.

Marketing Requirements for Out of Box Magic Program

Additionally, as the field deployment of new software based solutions is made easier, a mechanism needs to be created to provide customers with the ability to purchase and activate licensed software in the post sales cycle. This is especially important as an increasing percentage of Symbol sales come from the channel.

2.3.2 Training

OBM will be implemented across all product lines and will become a standard part of the PRP process and incorporated into every Product Requirements Document. OBM will be applied to the current product line to the extent possible on each product. Individual products must be evaluated in terms of their ability and readiness to take on various aspects of OBM. Associated training materials will be incorporated into all product courses that incorporate OBM.

A significant effort will be necessary to train the Symbol Sales and Partner network on OBM. At the outset, it will be important to engage a select set of hand-picked sales reps and partners that have long-term and positive customer relationships to be used as field champions who will endorse the Out of Box Magic message.

Similarly, a unified message that is integrated across advertising campaigns, internal presentations and on Symbol booths at tradeshows will help drive the importance of this program across the company and to the industry.

Training of field and service personnel is imperative to the success of the OBM program. Symbol System Engineers and Support technicians need to be well versed in the concepts, functionality and operations of the OBM solution, its components and supporting infrastructure.

2.3.3 Product Roadmap

From the initial product launch, the product will continue to incrementally evolve to support different security standards, new device platforms and other device management requirements.

As the OBM Program establishes the standard used for the mobile device product life cycle, there will be continual effort to promote integration from other mobile solutions providers.

2.3.3.1 Products Replaced

The OBM client will replace the current AirBEAM Smart client on current and new Symbol devices supporting multi-tasking operating systems, such as Windows CE and PocketPC.

2.3.3.2 Product Additions and Replacement Plans

Incremental software updates to handle additional features will be provided to product licensees. The Out of Box Magic solution is expected to continue to grow in terms of functionality. The Out of Box Magic Program is this initial phase in the Symbol product life cycle management program, additional solution sets will be added that integrate and enhance the complete product life cycle offering.

2.3.4 Support/Service Issues

The Symbol Product Life Cycle Management initiative, particularly the Out of Box Magic program requires infrastructure and resource support to manage the post-sale customer relationship. Helpdesk, SymbolCare Website, and Service Center need to be well versed in the concepts, functionality and operations of the OBM solution, its components and supporting infrastructure.

The OBM Program heavily relies on automation of processes to deliver content and support to Symbol customers. This initiative is Internet centric. Accordingly, Symbol must bring our web services capabilities up to the advanced capabilities to support this important initiative.

Marketing Requirements for Out of Box Magic Program

2.3.4.1 Web Based Customer Support

The Symbol on-line support site must be user friendly as sites found in the consumer electronics marketplace. A reference example can be found at:

http://www.nintendo.com/consumer/index.jsp

Site needs to provide help with setup and initial system connection, product troubleshooting, peripheral help, FAQ, repair service options, warranty information, product documentation, maintenance subscriptions, subscription and order problem solving, parts and accessory orders, etc.

The Symbol site must provide all this functionality in an easy to navigate format.

2.3.4.2 Advanced Helpdesk Support

The Symbol product managmement life cycle experience will add new capabilities to better support and service Symbol products and solutions. The OBM program will enable the Symbol support team to have access to remote diagnostics test information. The customer will be able to almost immediately know if a Symbol device requires service through the results of the OBM initialization. Symbol Warranty Return/Service Policy must be structured to provide an easy replacement for Out of Box failures. Advanced Product Replacement is a required program to quickly turnaround serviceable product in order to maintain customer loyalty when things go wrong.

2.3.4.3 Automated System Update

The Symbol OBM program must provide an infrastructure via the Internet that supports functionality of on-demand or scheduled software updates. Commercial examples include Symantec's LiveUpdate, Compaq's ActiveUpdate or Microsoft Windows Update.

These programs are examples of advanced web-based applications that provide proactive notification and automatic download of software updates for computing platforms from a secure repository. This is the preferred method for notifying and distributing software updates. The Symbol implementation will support updates directly to the device or to an intermediate customer server.
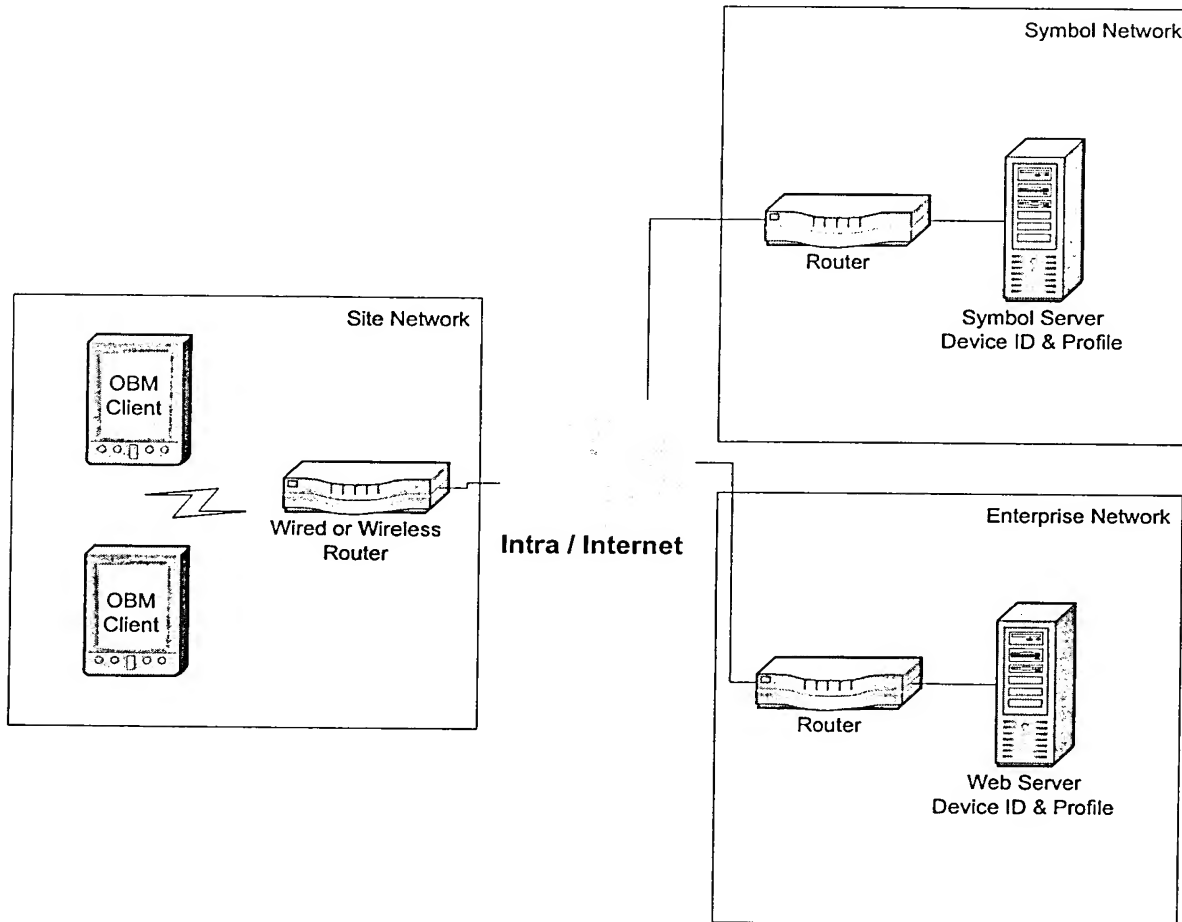
2.4 Risk Factors

There are many risk factors that can affect the market viability of the Out of Box Magic offering:

- Time to market - Inability to the drive solution to the customer and partner base in a timely fashion.
- Technical challenges and adoption of solution set.
- Ability to achieve intellectual property on aspects of the solution.
- Competitive offering from either mobile computing vendors or from device management ISV, including Microsoft.

Marketing Requirements for Out of Box Magic Program

3. Technical Approach

The Out of Box Magic program utilizes proven Internet standards to enable discovery and provisioning of mobile devices from the Symbol's network server or from a customer enterprise server. The Symbol network server can also be used to provide software and provisioning data to the customer enterprise server.

Out of Box Magic System Overview

Device identification and profile information, device software and configuration, is stored on these Internet accessible servers. The OBM device engine establishes a network address and connection using standard DHCP and resolves network address using DNS. Prior to connecting to the corporate network, the OBM device management engine discovers and provides device specific environment information to the server and is updated as required with new software and configurations.

The Symbol Corporate Device/Profile server maintains a database of deployed devices by their MAC Addresses. These unique identifiers are used to enable a device or customer specific profile to be assigned to a device.

When the OBM device engine provides this information to the Device/Profile server a lookup is performed and required updates and configuration information is distributed, via the inter/intranet, to the device.

Marketing Requirements for Out of Box Magic Program

Key functionality required in the OBM solution include:

- **Initial Power-up / Boot Diagnostics**

OBM will automatically run device diagnostics and produce a diag report that can be compared with the pre-shipment factory test and provide a record for future support. Diagnostic results/status will be provided to the user to indicate base device health and possible need for service. Tested functions will include:

- Display-pixel on/off, contrast, backlight
- LED's-on/off
- Keypad
- Keypad backlight
- Trigger
- Scanner
- Imager
- Speaker

- Microphone
- Touchpanel
- Main battery
- Battery backup
- Comm ports
- Memory
- S24
- MSR

- **Environment Discovery and Connection**

The OBM Engine will provide unique capability to discover its environment, network, services and associated peripherals. It will leverage standard based discovery mechanisms such as Universal Plug-and-Play (UPnP), Sun Microsystems' Jini, etc., to provide this core functionality.

o Ability to announce its presence to the network through a secure connection.

o Automatic discovery of devices in the local network and those located remotely.

o Ability to describe its capabilities as well as query/understand the capabilities of other devices including peripherals.

o Self configuration without administrative intervention

o Seamless inter-operability with other devices

OBM must also support alternative network discovery and connection methods in the event that automated discovery components are not available on the network. Solution would be a manual configuration utility with optional scannable inputs.

The OBM Engine must support all current and future wireless network security mechanisms to enable seamless connection to the customers environment including:

WEP, WPA, LEAP, Kerberos, PEAP, 802.1x, CISCO TKIP, EAP-TLS

- **Auto-Update and Registration**

The OBM Engine must support the automatic update of core system components. Solution must be in place to ensure that a device manufactured two months ago that is unboxed and deployed is quickly and cost-effectively updated with the latest software that may have been released since it was manufactured. This base functionality is required to support the update of operating system, firmware, drivers, patches, and applications. The update mechanism will leverage the current AirBEAM Smart capabilities expanded to support HTTP, TFTP and FTP protocols for File updates.

OBM will support software updates from either a server within the customer's enterprise network or through the Internet to a Symbol server.

OBM will also support the ability to perform product registration for software or software maintenance through the OBM Intra/Internet infrastructure.

- **Link Testing & System Data Collection**

The OBM Engine will also perform basic network link testing in addition to performing integrated diagnostics. This link test trip information along with other driver information will be recorded at the OBM server for use in performance analysis and fault-isolation. This core data collection functionality will support future Symbol product life cycle management offerings.

Marketing Requirements for Out of Box Magic Program

- **Device Personality – Applications and Configuration**

  The OBM Engine will support Location, User, and Device Model based Provisioning. OBM supports multiple options for setting the configuration or profile of a given device. These profiles can be based on the location of the device, a particular device user, or the device type itself. The device personality determines the applications loaded and application configuration, along with determining access to operating system.

  As with the base connectivy configuration, the device personality component of OBM will also need an alternative method to selecting the personality of a device. There will be several options available to support this requirement:

  - On-device wizard with optional scannable inputs.
  - Web based wizard
  - PC based utility wizard
  - Transfer of "personality" from peer device
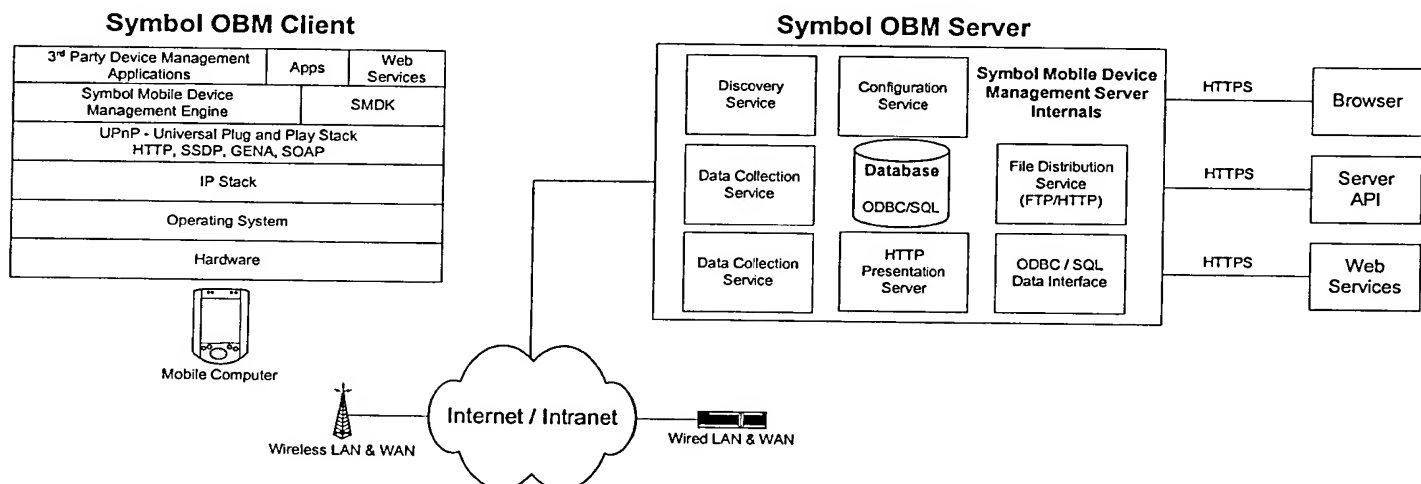
- **Event Generation**

  The OBM Engine or Client will generate events to the OBM Management Server for various actions that occur with the device and its environment. Such as battery status, cradle insertion/removal, peripheral discover, security violation, and diagnostic events. Events generated by the OBM client will be send to the OBM Server for processing or routing to 3rd Party Management tools in SNMP or other event formats.

Once all these Out of Box Magic steps are completed the device is ready for customer operation. The OBM engine will be active and monitoring for available updates or configuration changes as well as collecting device operational information and generating events.

3.1 Out of Box Magic Components

The OBM solution consists of several key components, which tightly integrated for effective and ease of use management. These components are constructed using proven Internet technologies to provide a secure and scalable solution for deploying mobile computing platforms. The main components are the **Out of Box Magic Client** and the **Out of Box Magic Management Server.**

These components are part on a comprehensive enterprise solution that is fully integrated with Symbol Technologies corporate systems to provide automated update notification to customers/subscribers, complete on-line support and download URLs, and easy to follow solution documentation.

Symbol OBM Client / Symbol OBM Server

Marketing Requirements for Out of Box Magic Program

3.1.1 Out of Box Magic Client

The OBM Client or Engine is a device resident software module that interacts with a server component to manage and monitor the update and operation of applications on the device. The client also collects device performance data to manage the health of the mobile device.   The Out of Box Magic Engine expands on the functionality of the AirBEAM Smart Client. The core functionality of the OBM Client is:

- Network Connection / Security / Device Diagnostics
- Environment Discovery - Peripheral Device Discovery Proxy
- Version Checking & Update - Core
- Statistic Collection & Link Test
- Remote Command Processing
- Device Lock-Down
- Event Generation

Functions and data of the OBM Client can be made available via API or Web Services to in-terminal applications or remote servers.

3.1.2 Out of Box Magic Management Server

The OBM Management server is the control, data collection and distribution point for managing mobile computing devices. The OBM Management Server contains many services that are required to implement the functionality of OBM.

- Discovery Service
- Data Collection Service & Database
- Personality Configuration Service
- File Distribution/Repository Service
- Presentation Server (HTTP)

The OBM Management Server provides the services required to gather and store accurate & abundant data through automated data collection performed by the OBM client.   By utilizing a standard ODBC/SQL database, the data can be processed for management & reporting by using standard database interfacing tools.   This allows for intensive data analysis to be performed by back-end server applications as well as allowing data aggregation with 3rd Party management tools. OBM Server must also support interfaces into leading directory services platforms, LDAP servers and MS Active Directory Server.

3.1.3 OBM Infrastructure

The OBM Program heavily relies on automation of processes to deliver content and support to Symbol customers. This initiative is Internet centric. Accordingly, Symbol must bring our web services capabilities up to the advanced capabilities to support this important initiative.   These include:

3.1.3.1 Network Servers and Databases

To provide customers that ability to manage their product deployment, Symbol needs to set up Internet web servers that support the OBM device discovery, software provisioning and download, and event reporting. These servers and associated product data based need must be made available to the Out of Box Magic customer and maintained.

3.1.3.2 Support and Download Sites

The Symbol on-line support site must be user friendly as sites found in the consumer electronics marketplace. Support Site must provide:
- Product troubleshooting
- FAQ
- Repair service options

Marketing Requirements for Out of Box Magic Program

- Warranty information
- Product documentation
- Maintenance subscriptions
- Subscription and order problem solving
- Parts and accessory orders

3.1.3.3 Automated Email Notification to Customers/Subscribers

The Symbol OBM program must provide an infrastructure via the Internet that support functionality of on-demand or scheduled software updates. Such as those found in Symantec's LiveUpdate, Compaq's ActiveUpdate or Microsoft Windows Update.

These programs are examples of advanced web-based applications that provide proactive notification and automatic download of software updates for computing platforms from a secure repository. This is the preferred method for notifying and distributing software updates. The Symbol implementation will support updates directly to the device or to an intermediate customer server.

3.1.4 OBM Documentation

Documentation will be intuitive, and simple. No Out of Box Magic instructions will take more than 5 steps. Pictures will be used in place of complex directions. Information will be organized in a logical manner and must be clear and easy to understand.

QuickStart Guide – Use of pictures and diagrams, simple instructions

Advanced Setup Guide – (Engineering) - expands upon quickstart for more sophisticated environments Delivered as PDF document, a multimedia demo detailing all the features of this offering will be created.

Release Notes – (Engineering) – Last minute Bugs, Known System Limitations and other information that is too late to be included in formal documentation.

Other documentation may be added based on customer/user requirements.

WEB Site – (Marcoms) – Posting Product Literature, Specification Sheets, White papers, Released and Beta Software to the Symbol Corporate Extranet

Sales Support Notice – (Technical Marketing) – Detailed overview of the product features and goals, with competitive positioning.

Product Marketing Bulletin (Marketing) – General overview of the product features and goals, part numbers and pricing, and competitive positioning information. Target audience is the Symbol & Partner Sales Associate.

3.1.4.1 Languages & Localization

This product will be released with user interfaces, application software, and documentation with language appropriate localization. Will support Symbol standard localized languages: English, French, German, Italian, Spanish, Japanese and Chinese.

3.2 Patent Issues

There are opportunities to expand the existing AirBEAM product patents to incorporate unique aspects of OBM discovery and provisioning with the wireless updating. Investigation of these intellectual property issues needs to be a **top priority**.

Marketing Requirements for Out of Box Magic Program

4. Market Requirements

4.1 Technical Requirements

At a high level, the following features are required. The priority for each is noted. Detailed feature/functional specification document will be developed in consultation with relevant technical marketing and engineering resources from Symbol engineering, the Life Cycle Management & TNT teams.

	Description	Priority
1	OBM Client operates on Windows CE and PocketPC	1
2	Support for Symbol Mobile Computing platforms with the above OS.	1
3	Support for all peripheral devices available for above product platforms	1
4	Boot Diagnostics that produce a results file and displays status to device screen. Out of the box diagnostics results must be easily and intuitively displayed to indicate the product is working at all levels: scanner, radio, display, voice, etc.	1
5	Initial diagnostic report must be stored for comparison with factory ship diag test.	1
6	Remote Diagnostic Support -- initiated from, with result sent to a remote system	1
7	User initiated Diagnostic Support accessible via special key sequence or password protected.	1
8	Diagnostics must test all hardware and base software components, along with any connected peripherals	1
9	Ability to connect to OBM Server through wireless network – ESSID, etc.	1
10	Client and associated tools must take security precautions to prevent introduction of rogue devices in this rapid deployment solution.	1
11	Client will support all current and future wireless network security mechanisms WEP, WPA, LEAP, Kerberos, PEAP, 802.1x, CISCO TKIP, EAP-TLS	1
12	OBM Client and Server shall support a standard based discovery mechanism such as Universal Plug-and-Play (UPnP), Sun Microsystems' Jini, etc.	1
13	Ability to announce its presence to the network through a secure connection	1
14	Automatic discovery of devices in the local network and those located remotely	1
15	Client shall discover Peripherals connected by serial, USB, PAN or LAN	1
16	Ability to describe its capabilities as well as query/understand the capabilities of other devices including peripherals	1
17	Seamless inter-operability with other devices	1
18	Self configuration without administrative intervention	1
19	Client must support alternative network discovery and connection methods in the event that automated discovery components are not available on the network. A manual configuration utility with optional scannable inputs.	1
20	OBM shall utilize a standards based Network Time Sync protocol, NTP / SNTP to synchronize the times on all devices and servers.	1
21	OBM Client will support remote configuration of TCP/IP network parameters: IP Address, Netmask, Gateway, etc.	1
22	Must support the update of operating system, firmware, drivers, patches, and applications.	1
23	Support HTTP, TFTP and FTP protocols for File updates	1
24	Support software updates from either a server within the customer's enterprise network or through the Internet to a Symbol server.	1

Marketing Requirements for Out of Box Magic Program

	Description	Priority
25	Support the ability to perform product registration for software or software maintenance through the OBM Intra/Internet infrastructure.	1
26	OBM will support multiple options for setting the configuration or profile of a given device. These provisioning profiles can be based on the location of the device, a particular device user, or the device type itself.	1
27	OBM will support directory services for user and device configuration. Must support LDAP and MS Active Directory Services.	1
28	OBM Client/Engine will be aware when accessories are attached and load in the appropriate software for that device. Example: Load appropriate emulator to support emulator keypads in the Gemini program or serial connected printer, MSR, etc.	1
29	Applications can pre-loaded from the factory, and initiated and configured during provisioning	1
30	Applications can be loaded on-demand during device provisioning	1
31	All applications can be updated with the latest version of software during provisioning	1
32	OBM Server Database contains provisioning rules such as update when available, update during off-peak, etc.	1
33	OBM must support the loading of Application Configuration files. These files will be created by the application providers' configuration utilities.	1
34	OBM Client will be used to enable / configure user lockout from operating system. Built-in functionilty or by using an external application such as PocketPC App/Control Center Apps for application control.	1
35	OBM will support an alternative method to selecting the personality of a device. There will be several options available to support this requirement: • On-device wizard with optional scannable inputs. • Web based wizard • PC based utility wizard – possibly a checklist format • Peer Personality Transfer	1
36	Application package verification to ensure proper installation	1
37	Automated application management. The ability to automatically clean-up or remove applications and data once the device profile changes. Device leaves a location or a new user assignment.	1
38	The OBM Client/Engine will support device asset and performance Data Collection. Specific Data Collection Data Model – list applicable collection points, system & driver info. To be defined in Design Specification Phase.	1
39	OBM Client will support an environment discovery update. During initial connection complete device data is sent to the OBM Server for the device itself and it's discovered environment. Data contains Device Asset Info, Standard System Info (Hw/Sw), Basic Infrastructure info (Channel, APs, Association, Network Type, Network Address, Network Peripherals, Peripheral connection types (Bluetooth, 802.11 Ad-hoc, and User Info). This large data package is sent infrequently.	1
40	OBM Client will support Network Link Testing. On a periodic basis an ICMP Ping is sent to collect round trip info to/from the OBM Server. This information along with other network and usage information is sent to the database on the SMDM Server. Example: Battery Status, Signal Strength, Signal Quality, Speed, Link Rating, Location Info, etc.	1
41	OBM Client will provide a GUI that can show device status, diagnostic results, provide front end for manual configurations.	1
42	OBM Client & GUI will provide ability to enter security login information, user name / password	1

Marketing Requirements for Out of Box Magic Program

	Description	Priority
43	OBM Client & GUI will provide **Device Lockdown**: Prevent unauthorized used of the device by preventing access to applications or the operating system without a valid authorization. (Required for Physical Device Security/Control Solution)	1
44	OBM shall utilize Wake on Wireless capabilities where available. Used to initiate unattended power-up, to perform of device management during off-peak operational hours. Whether the device is powered on or not.	2
45	The OBM Engine or Client will generate events to the OBM Management Server for various actions that occur with the device and its environment. Such as battery status, cradle insertion/removal, peripheral discover, security violation, and diagnostic events.	1
46	OBM Engine must maintain an event/audit log of activities in the device. This log file can be access or uploaded to the OBM Server	1
47	Events generated by the OBM client will be process in the OBM Server or routed to 3rd Party Management tools in SNMP or other event formats.	1
48	Error Recovery - All applications must be able to recover cleanly, without a loss of data from normal operational errors. Example of errors would include; Network Disconnect, Peripheral Device errors and failures, unexpected results from external interfaces, etc.	1
49	Number of mobile devices - The OBM Server shall support an unlimited number of mobile devices concurrently connected. Limits would only be enforced by licensing (TBD)	1
50	Application Reliability – All OBM components shall have a maximum failure rate of 1 per 520 operating hours.	1
51	Application Availability – OBM components shall achieve 99% up time. The application shall have a maximum error recovery time of five (5) minutes for server system errors and (1) minute for device client errors.	1
52	OBM Server management must be accessible via a secure web browser connection. Will NOT require separate interface client software to interact or manage the OBM Server.	1
53	OBM Client must adhere to Microsoft Logo Certification.	1

4.2 Compatibility

OBM Solution must be compatibility with existing Terminal Operating System, Drivers and Applications.

This solution shall also be compatible with standard Internet base protocols and interface specifications. Ex: TCP/IP, HTTPS, XML, etc.

OBM shall support export of functionality and data to 3rd Party Device Management tools.

4.3 Connectivity

Since the OBM Client or Engine will be component of all Symbol terminal devices moving forward, it must support a variety of communication modalities.

- 802.11a/b
- GPRS/GSM
- Ethernet - Cradle
- Serial - Cable or Cradle

Marketing Requirements for Out of Box Magic Program

- USB - Cable or Cradle
- Bluetooth
- IrDA

The OBM Client needs to support TCP/IP over links that will communicate discover and network addressing. Other protocols will be supported for communicating with peripheral devices via serial, Bluetooth or IrDA.

4.4 Appearance and Packaging

The Out of Box Magic Program will drive a completely new approach to packaging of Symbol Products. The main goal is to have flexible packaging designs that allow for customer specific configurations on the manufacturing floor.

For example, many customers order a spare battery per terminal. A cleverly designed compartment on the outside of the box could hold this battery. The insertion of the battery might take place at the configuration center, where customer specific software loads will be taking place.

The creation of a Symbol Out of Box Magic logo for devices that have been enabled with this new capability will be created for use with Symbol products and products that successfully complete the OBM Certification Program.

4.5 Price Position/Product Cost

Pricing analysis for the base Out of Box Magic offering is currently under consideration and review. Details will be provided along with Product Bill of Materials in separate Product Definition document. Options include:

- Providing the core Client/Engine without charge

- Selling updates subscriptions to customers with the sale of devices as high-margin annual maintenance or subscriptions agreements.

- Selling OBM Management Servers to Enterprise Customers

Future Symbol Product Management Solution sets that leverage the installed base and core functionality of the OBM Program will be sold on a license or subscription basis.

4.6 Warranty

Out of Box Magic software components will be covered under Symbol's standard Warranty for software products. Any Warranty extensions beyond factory standard must be negotiated with Customer Service management involvement.

4.7 Market Window of Opportunity

Time to market is a critical requirement of this program. There is an immediate need to bring the Out of Box Magic solutions to market. The first requirement is for the mid-year release of the Gemini product line. Refer to Gemini Beta Release Section, for specific requirements of the Gemini release. Also, the need to produce a solution that can be taken to other mobility solution vendors, to produced a wide offering of certified solutions in very important to gain market advantage as a thought and solution leader. Long-term the OBM Program needs to be an integral part of all Symbol product releases.

4.8 Marketing Bill of Materials

To be defined in final document release or in separate Product Definition document.

Marketing Requirements for Out of Box Magic Program

5. Operations Requirements

5.1 Operations Infrastructure

Product life cycle management encompasses more than the physical device, device software and peripherals, it also takes into account the required systems, infrastructure, solutions and personnel that accompany the product from creation through end-of-life. Coordination of many groups with numerous deliverables; technical, marketing, operations, services needs to occur.

The OBM Program heavily relies on automation of processes to deliver content and support to Symbol customers. This initiative is Internet centric. Accordingly, Symbol must bring our web services capabilities up to the advanced capabilities to support this important initiative.

Symbol Operations required changes to enable the OBM Program include:

- Network Discovery and Update servers and Database
- Web based support and download sites
- Web based registration and Automated Email Notification to subscribers

Refer to **OBM Infrastructure** section above for specific details on the required operational systems.

5.2 Device Network Connectivity and Security

The OBM solution must take into consideration any security concerns that may arise from this rapid deployment process to prevent introduction of rogue devices. Therefore, any solution that requires an unsecured WLAN is unacceptable.

The proposed solution consists of client software component, a server component and a "parameter configuration" application. The client either discovers or provides a front-end to configuring the device with the appropriate networking settings using manual input or via a bar code scanner. For access to wireless networks at least two parameters that must be set: ESSID and encryption settings. The client shall therefore accept two scanned in barcodes to configure ESSID and encryption.

The RF Parameter Configuration Application is a simple Windows application that accepts the ESSID and security input and prints out the corresponding barcodes, which will be used to configure the device. Once configured, the device will now be able to connect to the wireless network and use the OBM client to perform environment discovery, then complete the configuration and software load process.

To take the securing scheme a step further, the server component of the solution could require an additional parameter that is randomly generated based on a preconfigured schedule (e.g., hourly, daily, etc.) The RF Parameter Configuration Application could retrieve this information from the server and encode it into the two barcodes it prints. The client software then would have to pass in the schedule parameters to the server before being authorized to load the appropriate software. This limits the exposure from a lost barcode sheet since it would be useless after the specified time period.

This is one possible method to allow the rapidly deploy devices by simply unpacking a device, attaching the battery, powering it on and scanning the RF Config sheet with the ESSID and security encoded barcodes and move on the to next device.

5.3 Certification

A solution certification program for the Out of Box Magic program will be required to help drive the market positioning and value of this offering.

Marketing Requirements for Out of Box Magic Program

The OBM Certification program will offer 3rd Party hardware and software vendors the ability to "integrate" the OBM technologies into their value-added mobility solution. The integration will be controlled by minimal certification requirements and license agreement.

OBM Certification is a key component of this strategy. It requires Symbol developed and partner offered software to meet minimal Symbol Certification requirements, which provide value-add capabilities found in the OBM offering to the given solution.

Commitment to this certification ties partners and customers to a complete Symbol Solution offering that is built upon value-driven innovative components and are validated within the Certification program.

6. Gemini Beta Release - Out of Box Magic

The following functionality must be provided for the initial release of the Gemini product. This effort will utilize the current AirBEAM Smart product, its Staging utility, and AirMENU to perform these initial tasks.

Refer to the AirBEAM CE Staging Document for detailed information on staging devices with the AirBEAM Smart client, and to the AirMENU CE Product Reference Guide Document for detailed information on utilizing this application for application selection and loading.

Investigation of the AppCenter and ControlCenter Application Control programs will also be conducted to see if their use is applicable from this project and possibly for the long-term OBM program.

6.1 Terminal Emulators Preloaded

Terminal Emulation represents a significant percentage of installed applications, especially in the Retail segment. Providing emulation preloaded in Gemini eliminates IT from loading this software reducing costs. Symbol has selected Wavelink Terminal Emulation for the Gemini program. VT100, VT220, VT320, 3270, 5250 & HP 700/92 Terminal Emulation software will be preloaded onto Gemini from factory. Gemini software must provide capability for device to launch emulator based upon installed keypad.

6.2 AirBEAM Smart Basic Preloaded

AirBEAM Smart Basic provides many of the features required for a successful deployment; Gemini must have AirBEAM Smart Basic installed from factory to ease the system update process both for initial deployment and on-going maintenance. Since TE is now considered part of the "Gemini System," Wavelink Terminal Emulation will be included in the list of supported software for AirBEAM Smart Basic. With AirBEAM Smart Basic, the user will be able to configure network and Terminal Emulation settings to allow the user to quickly deploy a TE-based solution.

6.3 Definitions, Acronyms and Abbreviations

6.3.1 Definitions

Application Framework - A set of objects designed to facilitate the development of applications that solve specific business needs. Application frameworks contain industry-standard, pre-packaged functionality and easy-to-learn interfaces.

Bluetooth - is a short-range wireless computing and telecommunications industry specification that describes how mobile phones, computers, and personal digital assistants can easily interconnect with each other and with home and business phones and computers using wireless connection. Bluetooth requires that

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Marketing Requirements for Out of Box Magic Program

a low-cost transceiver chip be included in each device. The transceiver transmits and receives in the frequency band of 2.45 GHz.

Browser - Software that interprets the markup of HTML files posted on the World Wide Web, formats them into Web pages, and displays them to the user. Some browsers can also open special programs to play sound or video files in Web documents if you have the necessary hardware.

Distributed System - A computer system of more than one CPU and terminal which are separated geographically but are linked together functionally in network. In addition, the database may be spread among multiple servers in the system. Also called Distributed Computer Environment (DCE).

Enterprise Architecture - A set of standards that define an organization's strategic implementation of technology. The standards clearly reflect the enterprise's overall business objectives. They provide the framework for application deployment and the basis for making decisions about data distribution, replication and integrity.

HTML (Hypertext Markup Language) - the document encoding scheme for hypertext documents. An HTML document is a mixture of text and special reserved characters used to control the formatting of the text.

Hyperlink - an HTML document "Hot Spot." Selecting the hyperlink causes a jump to another location within the document or to another document on the Web.

Internet - A worldwide network of thousands of smaller computer networks and millions of commercial, educational, government, and personal computers. The Internet is like an electronic city with virtual libraries, storefronts, business offices, art galleries, and so on.

Intranet - A network within an organization that uses Internet technologies (such as the HTTP or FTP protocols). You can use an intranet to move between objects, documents, pages, and other destinations using hyperlinks.

Java - Object oriented programming language for designing high resolution graphics on the World Wide Web; also enables users to access applications on computers regardless of make, and to develop/distribute new software faster.

JavaScript - An interpreted scripting language that can be embedded into HTML files. JavaScript is read and processed by the browser as source code. The syntax is similar to the Java programming language.

Objects - A group of things (nouns) which has specific characteristics and behaviors. For example, a group of employees can be defined in an object called Operator. Its characteristics (properties) can include identification number, name and address. Its behaviors (methods) can include sign-on and assigning a security code.

Provisioning - *configuring*, as in "correctly provisioned the mobile device to work in the customer's environment and enabled with the customer chosen applications and settings."

Thread - A thread is an object with a process that run program instructions. Threads allow concurrent operations to occur within a process.

USB (Universal Serial Bus) - is a plug-and-play interface between a computer and add-on devices (such as audio players, joysticks, keyboards, telephones, scanners, and printers).

6.3.2 Acronyms

GPRS – General Packet Radio Services

GSM – Global System for Mobile

IrDA - Infrared Data Association

OBM - Out of Box Magic

UPnP – Universal Plug and Play

Marketing Requirements for Out of Box Magic Program

USB - Universal Serial Bus

VPN – Virtual Private Network

WNMS - Wireless Network Management System

WLAN - Wireless Local Area Network

6.3.3 Abbreviations